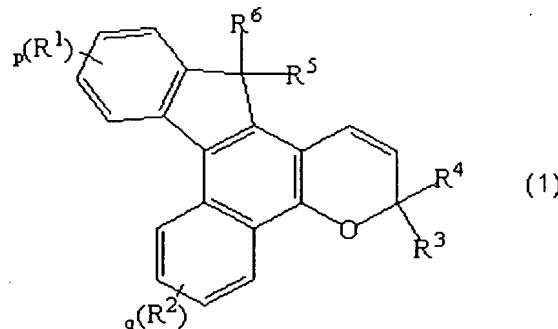


## Claims:

1. A photochromic optical article comprising an optical substrate having a photochromic layer which is formed on at least one surface thereof and contains a photochromic compound dispersed in a resin, and a thin metal oxide layer formed on said photochromic layer, wherein an indenonaphthopyran compound is used as said photochromic compound, said photochromic layer having a thickness of 30 to 50 $\mu\text{m}$ , and said thin metal oxide layer has a thickness of 0.01 to 10 $\mu\text{m}$  and is of a single-layer structure or of a laminated-layer structure of not more than three layers.

2. A photochromic optical article according to claim 1, wherein said thin metal oxide layer is formed on the photochromic layer via a buffer layer of a thickness of 0.1 to 20 $\mu\text{m}$ .

3. A photochromic optical article according to claim 1, wherein the indenonaphthopyran compound is expressed by the following general formula (1),



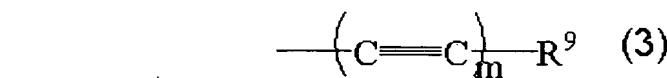
30 wherein,

p and q are integers of 0 to 3,  
 $\text{R}^1$  and  $\text{R}^2$  are, respectively, hydroxyl groups, alkyl groups, trifluoromethyl groups, alkoxy groups, alkoxy carbonyl groups, carboxyl groups, alkoxy methyl groups, hydroxymethyl groups,

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aralkoxy groups, amino groups, substituted amino groups, cyano groups, nitro groups, halogen atoms, aralkyl groups, substituted or unsubstituted aryl groups, substituted or unsubstituted heteroaryl groups, substituted or unsubstituted heterocyclic groups having a nitrogen atom as a hetero atom and in which the nitrogen is bonded to the indenonaphtho ring, or condensed heterocyclic groups in which the heterocyclic group is condensed with an aromatic hydrocarbon ring or with an aromatic heterocyclic ring,

R<sup>3</sup> and R<sup>4</sup> are, respectively, substituted or unsubstituted aryl groups, substituted or unsubstituted heteroaryl groups, alkyl groups, groups represented by the following formula (2) or (3),



or R<sup>3</sup> and R<sup>4</sup> together may constitute an aliphatic hydrocarbon cyclic group or an aromatic hydrocarbon cyclic group,

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R<sup>5</sup> and R<sup>6</sup> are, respectively, hydrogen atoms, hydroxyl groups, alkyl groups, trifluoromethyl groups, alkoxy groups, alkoxy carbonyl groups, carboxyl groups, alkoxy methyl groups, hydroxymethyl groups, aralkoxy groups, amino groups, substituted amino groups, cyano groups, nitro groups, halogen atoms, aralkyl groups,

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substituted or unsubstituted aryl groups,  
substituted or unsubstituted heteroaryl groups,  
or R<sup>5</sup> and R<sup>6</sup> together may form a substituted or  
unsubstituted aliphatic hydrocarbon cyclic group  
5 or a substituted or unsubstituted heterocyclic  
group having one or two hetero atoms in the  
ring, wherein the aliphatic hydrocarbon cyclic  
group or the heterocyclic group may be condensed  
with a substituted or unsubstituted aryl group or  
10 with a substituted or unsubstituted heteroaryl,  
wherein in the above formulas (2) and (3),  
R<sup>7</sup> is a substituted or unsubstituted aryl  
group, or a substituted or unsubstituted  
heteroaryl group,  
15 R<sup>8</sup> is a hydrogen atom, an alkyl group or a  
halogen atom,  
n is an integer of 1 to 3,  
R<sup>9</sup> is a substituted or unsubstituted aryl  
group, or a substituted or unsubstituted  
20 heteroaryl group, and  
m is an integer of 1 to 3.

4. A photochromic optical article according to  
claim 1, wherein said metal oxide is silicon oxide,  
titanium oxide, zirconium oxide, tin oxide, zinc  
25 oxide, cerium oxide, iron oxide or a composite oxide  
containing these oxide components.

5. A photochromic optical article according to  
claim 1, wherein said thin metal oxide layer is formed  
by evaporation. 6. A photochromic optical article  
30 according to claim 1, wherein said metal oxide is  
silicon oxide.

7. A photochromic optical article according to  
claim 6, wherein said thin metal oxide layer is a  
silicon oxide layer, and is formed by converting  
35 polysilazane in the thin polysilazane layer formed on

the photochromic layer into silicon oxide.

8. A method of producing a photochromic optical article, comprising:

5 preparing an optical substrate having a photochromic layer of a thickness of 30 to 50 $\mu\text{m}$  formed on at least one surface thereof and in which an indenonaphthopyran compound is dispersed in a resin;

10 forming a thin polysilazane layer on said photochromic layer by applying a coating solution containing at least a polysilazane followed, as required, by drying; and

15 converting polysilazane forming said thin layer into silicon oxide to thereby form a thin silicon oxide layer of a thickness of 0.01 to 10 $\mu\text{m}$ .

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